Planning and Changing
Vol. 42, No. 1/2, 2011, pp. 9–40

Dianne C. Gardner

ILLINOIS IMPROVING TEACHER QUALITY STATE GRANTS: LEARNING ABOUT STEM PARTNERSHIPS

As a necessary preliminary for this issue on Illinois' experience with school-university partnerships to provide teacher development opportunities, this article provides a review of the literature relevant to such programs. As the evaluation and assessment have changed over the years since the Eisenhower grants period, the author explains the thoughtful and purposive ways in which the assessment of Illinois' programs have evolved. These changes touch the structures, processes, meta-evaluation, and capacity for evaluation. Illinois Board of Higher Education grants policies now reflect the results of these evolved evaluation methods. The author includes details of research methods and protocols, research questions, and the theory of change that informs all these methods.

This article provides background and an overview for this special issue of *Planning and Changing* on school-university partnerships designed to support teacher professional development and learning in Science, Technology, Engineering, and Math (STEM) disciplines. The enterprise we describe is the Illinois Improving Teacher Quality (ITQ) state grants program administered by the Illinois Board of Higher Education (IBHE) and evaluated by the Center for the Study of Education Policy (CSEP) from 2003 into 2011. This special issue explores the relationships among partnership structures, collaborative partnership processes, program meta-evaluation and evaluation capacity building, and policy refinement. This article also offers a brief overview of the scholarship, a research framework, research questions, and methodology, the comparative case study. We share our research protocol (Appendices A–C: Illinois Teacher Quality State Grants: Research Framework) and offer three articles (named below) as our comparative case findings to date on the partnership structural configurations; partnership collaborative implementation features and processes; and the IBHE's theory of change and use of program theory. Finally, we follow these three articles from select ITQ projects as illustrative case studies considered through the lens of program theory, and we list these below as well. Overall, this article provides the balcony view of the project and evaluation development from 2004 to 2011.

Background

In 2001, the Elementary and Secondary Education Act of 1965 (ESEA) was reauthorized and amended and after 2002 was known as the No Child Left Behind Act (NCLB). This act "places significant empha-

sis on assisting schools and school districts in increasing the academic achievement of all students by improving teacher and principal quality and ensuring that all teachers are highly qualified" (IBHE, 2003). In Title IIA, NCLB was reconceived as the Improving Teacher Quality (ITQ) state grant program. The ITQ program replaced and expanded the Dwight D. Eisenhower Professional Development Program, although most ITQ projects retain Eisenhower's STEM focus. Hence, this special issue addresses the STEM projects, alone from the total collection of projects for reasons expanded below. The policy also mandated partnership, defining that term by listing eligible institutional types that at minimum include a P–12 and a postsecondary partner.

The NCLB Title IIA ITQ grants were in their inaugural year when we began supporting individual project evaluation and serving as meta-evaluators. Like most grant evaluators, we do not design the programs we evaluate nor do we dictate evaluation parameters on individual projects. Since 2004, we have become partners with IBHE grants administrators as they worked to make evaluation meaningful. Evaluation is an artifact of government activism. As funding grows, so does the demand for evaluation with shareable, usable results (Office of Budget & Management, 1993; Joint Committee on Standards for Educational Evaluation, 1994). The intention is to build and refine policy through successive iterations, use evaluation to study the theories of change represented in each grant project, and share findings across audiences: policy makers, scholars, and practitioners. The ITQ state grant program is one resource to study change mechanisms facilitated and sustained by collaborative partnerships.

In 2003–2004, we re-conceptualized the IBHE grant funding process as a set of comparable "treatments" that could be evaluated and improved by linking evaluation to the grant funding cycle. The cycle begins anew with a new request for proposals (RFP) or renewal applications that reflect what evaluators have learned across the grants. Since 2007, we use program theory and its visual organizer, the logic model, to clarify theories of change, make them explicit, and consider theory development and refinement.

Throughout the development and refinement of our approach to STEM school-university professional learning partnerships, we have relied on scholarship in several areas, chief among them school-university partnerships, professional development, and educational renewal or change processes. Our focus on change processes draws out the structures, implementation features, and evaluation capacity building (ECB) processes necessary among partners to make these projects result in viable, sustainable partnerships to which teacher and student learning can be attributed over time. We briefly share our research framework here. We follow with three articles, each of which explores a key element of our work: the nature of partnerships in "Three Configurations of School-University Partnerships: An Exploratory Study" (Baker, 2011); the role of partnerships in renewing educational institutions in "Characteristic Collaborative Processes in

School-University Partnerships," (Gardner, 2011); and building evaluation capacity among partners in "Evaluation Capacity Building in a School-University Partnership Grant Program" (Haeffele, Hood, & Feldmann, 2011). Each of these articles offers a deeper exploration of scholarship and how it has guided us as we endeavor to answer four research questions.

Research Questions

There are four basic research questions that guide the statewide evaluation of the ITQ grant program. The goal is to define what partnership means for ITQ projects, individually and collectively. With empirical characterizations of the partnerships in hand, we then develop explanations for forming and sustaining viable partnerships capable of yielding changes in student learning and achievement. These questions remain essentially unchanged since 2004:

1) How are the ITQ STEM professional development partnerships structured?
2) How do collaborative implementation processes, past, present, and emerging, assure achievement of ITQ's educational goals?
3) How does collaborative evaluation guide decisions to keep the focus on teacher learning, implementation, and student learning and achievement?
4) How can IBHE and school-university partners build greater capacity through systemic program evaluation?

We approach these questions using a comparative case approach to first describe, then develop explanations for, the effectiveness and sustainability of partnerships. We discuss our research frameworks, designs, and methods below.

The ITQ Research Framework

Three strands of scholarship inform our ITQ grant meta-evaluations from 2004 to the present: (a) school-university collaborative partnerships in STEM disciplines; (b) partnership implementation features and processes for professional learning; and (c) evaluation and evaluation capacity building. In 2006, we developed our research protocol which we revised in 2010 (Appendices A–C: Illinois Teacher Quality State Grants: Research Frameworks). We begin with the structures of these partnerships (Appendix A: Structures: Collaborative Elements) and the collaborative implementation features and processes of the partnerships (Appendix B: Professional Learning Processes: Collaborative Elements). Finally, we consider evaluation capacity building using program theory and logic modeling (Appendix C: Evaluation Capacity Building: Collaborative Elements).

This overview is necessarily brief, and individual articles include the literature reviews of the topics at hand. Here, we offer an overview on the problems of understanding partnerships shared by scholars, evaluators, and practitioners. We do not review the scholarship on effective professional development in-depth here but will take it up in the later articles in this special *Planning and Changing* issue. There is a long standing consensus about professional development (Hawley &Valli, 1999). We focus on an empirical characterization of partnerships, so we consider the attributes of professional development in this light. In 2009, the IBHE adopted a policy for the ITQ grants requiring that all projects include five principal characteristics of effective professional development: (a) content focus; (b) active learning; (c) coherence; (d) duration; and (e) collective participation (Desimone, 2009). Professional learning is strongest when actual classroom models, instructional tools, and materials are shared resources, and several ITQ projects incorporate this insight (Ball & Cohen, 1996). Because these characteristics are part of policy, they become foci for evaluation and organize our thinking about professional development as a way to examine the partnership structures, collaborative implementation processes, and evaluation capacity.

Understanding Partnerships: Structure and Implementation

Partnerships are common in human experience. Marriage unites life partners. Professional partnerships unite doctors and lawyers; business partnerships unite entrepreneurs. Partnerships are at their best when partners exhibit a spirit of hope for what they can accomplish and share a willingness to work together through challenges. School-university partnerships come with particular challenges, and stakes for the partners are high. Professional development funds are increasingly scarce. Partnerships take time and often rely on only a few individuals to make them viable and sustainable. School and university partners differ in their approaches to education and to reform, and wave after wave of reform has made all the partners anxious about what they can hope to accomplish and distrustful of each other (Bryk & Schneider, 2002; Gardner, 2010).

In scholarly terms, school-university partnerships are not well-defined (Clifford & Millar, 2008; Zhang et al., 2009). Goodlad defines partnerships between schools and universities as "a planned effort to establish a formal, mutually beneficial interinstitutional relationship (1991, p. 58)," and this definition is the most commonly cited (Clifford & Millar, 2008). Another common approach defines partnership by membership (Kingsley & Waschak, 2005; Podolny & Page, 1998). IBHE took this approach in its requests for proposals (RFPs) and lists required and potential partners. Required higher education partners must include a public or private college or university, including two divisions: the unit that prepares educators (e.g., College of Education) and the unit that includes discipline specific depart-

ments that represent content expertise in STEM (e.g., College of Arts and Sciences). It is interesting to note that Illinois ITQ does not include any divisions of engineering, applied science, or technology, and the RFPs have not specified these partners on membership lists. An Illinois public school district meeting federal criteria as "high need" is another required partner. Optional partners include community colleges, regional offices of education, a wide range of community partners, and private schools (IBHE, 2010). This list of partners as members constitutes Illinois' de facto partnership policy: bricks and mortar as partner to bricks and mortar.

Other definitions and approaches to understanding partnerships rely on comparisons to other organizational and interinstitutional forms such as networks, consortia, and alliances (Badiali & Flora, 2000; Clifford & Millar, 2008; Druckman & Peterson, 2002; Podolny & Page, 1998). Few scholars acknowledge the problem of partner asymmetry developed in this special issue of *Planning and Changing* (Baker, 2011; Gardner, 2011; Krasny, 2005). The NCLB Act favored an innovation-adoption model that leverages university expertise to alter school practices (Krasny, 2005), so an expert-driven, top-down orientation to partnership that privileges the higher education partner is a design element in all ITQ projects to one degree or another.

The Improving Teacher Quality research framework (Appendix A: Structures: Collaborative Elements) uses four lenses to take a nuts and bolts approach to describing the ITQ partnerships structurally with:

1) General descriptions of the institutions and individuals that comprise the partnership, emphasizing the formal characterizations and the role of authority in the partnership;
2) Characterizations of the roles and relationships that are crucial to partnership and how they are distributed, including the all-significant boundary-spanners crucial to partnership viability;
3) Accounts of formal and informal rules and expectations among the partners; and
4) Resource audits that include partnership expertise, financial resources, and in-kind contributions.

Each of the four lenses represents an element of collaboration that is basic and shared by ITQ partnerships. Understanding partnership is problematic, and the struggles we share with other researchers and evaluators testify to this. Further compounding our challenges to understand how partnerships can enhance student achievement is that they are not formed once and remain the same forever. They move forward in time and must develop and adapt. It is insufficient to understand partnerships as structures or complexes of roles, rules, expectations, and responsibilities. Therefore, we extend our work into the implementation features and processes that we observe empirically in our ITQ statewide evaluation.

The ITQ research framework (Appendix B: Professional Learning Processes: Collaborative Elements) considers collaborative implementation features and processes by organizing partnership development as a three-stage chronology:

1) The partnership history or background prior to proposing an ITQ grant and changes that ITQ generated in existing partnerships. Prior relationship is one of the best predictors of a partnership with developmental potential;
2) The partnership's processes that occur when planning the project, making decisions, moving forward with plans, and taking steps to make the partnership sustainable; and
3) The partnership's plans and vision for the future as late steps that link the partnership's characteristic structures and implementation processes to evaluation, monitoring, and improvement or ECB.

We can also describe the ITQ research framework by what it does not do. It does not set out to study something as ineffable as trust, although we know that trust matters in partnerships (Bryk & Schneider, 2002). We understand the value of ineffable qualities like trust and mutual respect to any partnership, and indeed we observed these in different contexts and different degrees of development. But we opted for basic descriptions of structures and implementation practices and processes instead. In all partnerships, structural and collaborative features enable evaluation and use of evaluation findings and implications to one degree or another, so our research delved into the partnerships to consider how to support evaluation for improvement and building evaluation capacity as critical partnership functions and as a statewide ECB mandate (Preskill & Boyle, 2008; Stockdill, Baizerman, & Compton, 2001).

Evaluation and Evaluation Capacity Building

The ITQ research framework separates evaluation and evaluation capacity building in its statewide evaluation research into IBHE-funded partnerships. In the first instance, evaluation assesses the adequacy of ITQ project evaluation plans to inform all partnership constituencies about results and to make ongoing adjustments using this feedback. Key collaborative elements in evaluation are the intended goals and outcomes and their appropriateness for ITQ, the adequacy of planned measures, and the adequacy of evaluation to inform improvement and to provide funders at the IBHE with tools they need to make funding decisions. Evaluation capacity building is a set of intentions and actions to make evaluation integral to organizational and interinstitutional learning by building understanding of evaluation, improving evaluation practices, and making the use of evaluation results a partnership imperative. Through ECB, partnership constituencies "learn to think evaluatively and how to engage in sound evaluation

practice" (Preskill & Boyle, 2008, p. 443). The ITQ research framework (Appendix C: Evaluation and Evaluation Capacity Building: Collaborative Elements) investigates this as a collaborative capacity of partnerships, considering three features:

1) Development of an explicit theory of change that scholarship and practical wisdom would suggest comprise a reasonable plan to improve student achievement;
2) Feedback mechanisms as structures and processes to enable partners to learn together to improve the partnership and the project; and
3) Ability of project evaluations to support statewide capacity to improve professional development partnerships.

Evaluation capacity building is a related set of collaborative elements that the partners must share. Among these are shared responsibilities for developing a theory of change for the project and developing a logic model (Chen, 2005; Chen & Rossi, 1987; Frechtling, 2007; (Wholey, Hatry, & Newcomer, 2004). ITQ projects must present detailed evaluation plans that include logic models based on the scholarship on STEM professional development, partnerships, and exemplary evaluation practices. In this special issue, a detailed discussion of ECB in ITQ offers an overview of the use of theories of change and logic modeling in ITQ ECB development efforts (Haeffele et al., 2011). One feature of ECB in Illinois is that individual project evaluations are just one piece of the state's evaluation strategy. The second is the statewide evaluation using comparative case studies that has allowed the ITQ program to develop and refine STEM education policy at IBHE. In the next section, we offer the CSEP statewide evaluation designs and methods.

Comparative Case Studies in ITQ Meta-Evaluation

We have written at length on single and comparative case studies in research, evaluation, and the development of theory (Vogt, Gardner, Haeffele, & Baker, 2010). In the case of grant evaluations, comparative case studies develop as natural experiments that consider a full set of programs for evaluation (Stake, 2006; Vogt et al. 2010). The practice of studying STEM professional development efficacy using multiple, comparative cases is long-standing in former Eisenhower grants and their antecedents in Illinois ITQ, National Science Foundation Math Science Partnerships, and other grants (Abell et al., 2007; Blackwell, 2004; Birman, Reeve, & Sattler, 1998; Boyd, Banilower, Pasley, & Weiss, 2003; Garet, Porter, Desimone, Birman, & Yoon, 2001; National Network of Eisenhower Regional Consortia & Clearinghouse, 2004a, 2004b; Porter, Garet, Desimone, Yoon, & Birman, 2000).

In our comparative work, we have been guided by three goals: (a) to evaluate the state program to help improve it; (b) to provide technical

assistance to individual projects; and (c) to research what works in these partnerships in general. We work to balance our evaluation and research roles with our technical assistance to projects, and we do not make funding decisions. We began with a comparative orientation, realizing that comparisons are empirically rooted in individual cases. But a case by case report is of little value to policy makers, so the IBHE sought our assistance to apply lessons learned from each grant cycle in subsequent cycles. We understood that we sacrificed some situational variation to develop explanations for policy application. We also understood the power of variation to help explain a phenomenon of interest. In the next section, we offer a general overview of comparative cases, the role of sampling and analytic purpose, and the role of variation in theory development.

Comparative Cases: Sampling, Analytic Purpose, and Variation

We began in 2004 to empirically describe partnerships. These projects, designed under the same policy regime and scholarship, share commonalities and allow us to see the same general program theory applied in different contexts. Our work continues as we seek explanations of what makes partnerships viable and sustainable. This requires multiple cases with sufficient variation for building, refining, and testing theories of change within and across the ITQ projects. We briefly discuss design, but we focus on the adequacy of our sample to match our analytic purposes and how variation helps explain what works and what doesn't (Vogt et al., 2010).

One benefit of case studies is flexibility and the variety of applicable designs. In our meta-evaluation, we employ four data collection designs: interviews, archival analysis of grant-wide and project specific documents and other materials, focus groups, and naturalistic and participant observations. We collect data through site visits, statewide symposia, web site analysis, and electronic file transfer.

The ITQ meta-evaluation sample for data collection is the full project set from 2004, a total of 22 STEM projects out of 26 projects. Generally since 2004, the sample shrank as the policy was re-focused, and fewer projects were funded. 2007 was a year where policy changed course, and since that time fewer projects are funded as a matter of course in order to focus on identifying the structures, processes, and evaluation capacity of effective projects. Ten cases were funded in FY2010 and nine in FY2011 as one project did not apply for continued funding.

We have two sampling strategies for collecting individual project data. Both are purposive. The first is to complete two to five annual site visits to observe planning and steering meetings, summer institutes, school-based teams, follow-up workshops, and classroom visits. We return to sites based on research questions as we develop them for individual cases. The more complex and interesting the case and the more we believe we have to learn, the more frequent the visits. These decisions are made collaboratively by the

CSEP team. The second sampling strategy is convening project directors, external evaluators, and staff and self-identified partners for annual or biannual symposia that include focus groups. We collect all public documents and materials developed for project events, project record keeping and communications, and school products that may include student work. Increasingly web-based resources are sampled, including video and MP3 links.

In statewide program evaluations, typically comparative case samples are intermediate sized and use the full set of participating cases. This suits our analytic purposes as well. For preliminary, descriptive work, a single case studied over time and in-depth is useful. But for explanatory purposes, intermediate samples are needed: 10 to 40 cases selected for variation depending on the research questions (Ragin, 2008; Vogt et al., 2010). The use of disconfirming cases is well-established for sampling and analysis (Patton, 2002; Vogt, et al., 2010), and little existing partnership research includes such cases (Clifford & Millar, 2008). Comparative cases with disconfirming cases, sensitivity to contextual variation (Abell et al. 2007), and pairing cases for analysis allowed the team to develop characterizations of STEM professional development partnerships as single-tier, multi-tier, or complex-brokered (Baker, 2011). We wanted to use a range of confirming and disconfirming cases to bolster our confidence that we had: (a) accurately described partnerships as structures and processes and (b) preliminarily explained partnership viability and sustainability for policy makers and other constituents. Without explanations, policy makers would not be able to use evaluation results for funding and new policy iterations.

We also benefitted from this intermediate sample size to study partnership variations. Illinois is a state of extremes. We would not expect a P-20 partnership to be the same for elementary teachers in Chicago as it might be for high school teachers in the rural south. ITQ projects represent a rich array of rural, mid-sized and large urban, and mixed settings, and all levels of schooling (i.e., elementary, middle, and high). The postsecondary partners vary by type, from regional and flagship public universities, private research universities, to small liberal arts colleges.

These and other variations mattered as the ITQ grants face context-specific challenges. For example, we wanted to understand effective STEM professional learning structures in context. Collaborative models for professional learning are well-developed in scholarship, but creating these structural arrangements and effective team processes in different settings is challenging (McLaughlin & Talbert, 2006; Stoll & Louis, 2007). Most schools convene teams organized by grade level in elementary school, pods in middle school, and departments in high school. Project-specific responses to these challenges were critical to developing our three-part structural configurations model to shape policy and improve P-20 collaborations, of which we use three cases to highlight in this special issue. The availability of university partners in Chicago means that urban ITQ projects must compete with other initiatives from neighboring universities. Without

school leadership focused on STEM, teacher energies are easily drained away. The University of Chicago's ITQ case study, "Seeking Symmetry in a School-University Partnership: University of Chicago and Chicago Public Schools—A Collaborative Approach to Developing Models and Tools for Professional Development and Teacher Preparation" (Leslie, 2011), presented in this special issue, had team-based structures and processes in its 2007 design, but struggled as some principals encouraged multiple initiatives, with a resulting loss of coherence, creating variable results for school-based teams (Newmann, Smith, Allensworth, & Bryk, 2001). In contrast, Southern Illinois University-Edwardsville is the regional partner to several remote, poorly resourced schools, sometimes with only one science teacher. For the Edwardsville ITQ case study, "Improving Science Instruction in Southwestern Illinois and Metro East St. Louis: Students Learning Science through a Sustained Network of Teachers," also in this special issue, one challenge has been to create networked support teams and other resources for isolated teachers.

In a final example, the case study of Southern Illinois University-Carbondale's project, "Improving Teacher Quality in Southern Illinois: Rural Access to Mathematics Professional Development (RAMPD)" (Prusaczyk & Baker, 2011) included here, is a cautiously optimistic story about a partnership configuration where we would not expect success under our own current theories. Yet the RAMPD project is developing a regional network of elementary math teachers who are increasingly capable of meeting the challenges of radically changing teaching practices and leading the way for others. The variation that makes the case unique informs our understanding of the other nine cases. It is an exception that demonstrates a developing rule.

The interplay between ITQ cases, developed over years by the Center team of six site visitors/evaluators, leads us to adopt a comparative case study approach that has been applied to evaluating the professional development component of STEM partnerships. In the next section, we consider our coding and analysis procedures.

Coding and Analysis

In our approach to evaluation, we consciously break with the troublesome quantitative/qualitative divide to distinguish data that is best coded as words from that best coded as numbers or symbols. We choose instead to emphasize sampling, analytic purposes, the role of variation, and the application of findings to policy (Vogt, Gardner, & Haeffele, in press). We developed several codes from our data set, but our major coding scheme uses words with documentary, interview, and observational evidence as major data sources. Numeric coding was used generally within projects for assessment results (including state tests) and project demographics. Numeric codes are most useful for individual projects in their own evaluations which

are shared in the annual renewal process. These numeric codes are found in the three case studies as needed and did not contribute substantively to our findings about structures and processes, or description of ITQ's evaluation capacity building efforts, the three foci of this special issue.

From our comparisons over time, we developed a truth table as a set of codes. We developed nine key variables that contributed to our understanding of collaborative partnerships. We discuss the truth table at length elsewhere but offer this overview of the independent variables we considered (Vogt et al., 2010). The dependent variables are teacher learning, implementation that results from professional development, and student learning. Each variable figured in the shaping of ITQ policies at the IBHE from 2004 on, albeit with different emphases as we learned together what mattered for collaborative partnerships. From this coding scheme, we developed two models of partnership structures and processes, the structures of training and implementation processes model (STPI) (Baker & Gardner, 2005) and "Three Configurations of School-University Partnerships" (Baker, 2011). "Characteristic Collaborative Processes in School-University Partnerships" (Gardner, 2011), the processes typical of each structural configuration are considered in this special *Planning and Changing* issue.

Each ITQ Center researcher was responsible for data collection for each grant project, sometimes with a second researcher. Each visit was prepared as contemporaneous field and interview notes. Field notes were then developed into memos. These memos were shared among the Center team and IBHE grants administrators. Using the memos, the Center team held coding seminars four to eight times annually. Additionally, Center evaluators and IBHE administrators convened to review results once or twice a year, with all members reviewing memos and major project documents. Then the results were used to alter policy. For example, in 2009, we created a revised grant application based on our three configuration models, characteristic implementation features and processes, and the five effective professional development characteristics (Desimone, 2009). This process varied over time as scholarship on STEM partnerships advanced, as and we witnessed ITQ partnerships in the field. We discuss this process and share examples of how it worked below in the case studies in this special issue from three of our ongoing 2007–2011 ITQ projects.

Next we developed evaluation and research products that we then used for member checking. For example, the STPI model was developed from the 2005 symposium with input from project partners. Using the STPI model, we went to the field and over three years revised STPI in consultation with project directors, evaluators, and other key staff. The October 2008 symposium used four position papers, developed as our best thinking to date about partnerships, to convene ITQ project leaders to: (a) offer what we had learned so that projects could learn from each other; (b) to elicit responses to improve the papers; and (c) to engage projects in focus groups about their collaborations. In 2007, we introduced program theory

and logic modeling. Our internal memos were expanded into case studies shared with project directors and evaluators for their feedback. Each case represented a theory of change as we saw it and was revised using this feedback. The projects for their part used the cases to re-imagine and re-articulate theories of change in the next granting cycle. This member checking process continues each year at symposia that convene ITQ stakeholders to discuss Center findings, which are then revised to reflect common understanding about the status of the ITQ projects.

Theory Development and Elaboration: 2004–2011

We began with comparative case studies for meta-evaluation, and we have not substantively changed our designs, sampling, or analytic processes since 2004. There are currently five team members; the original team had four members, three of whom continue. The stability of the team translates as continuity and as a viable partnership with IBHE grant administrators, with one of these administrators starting in 2004 as well. It would be possible to use our current models to evaluate our partnership with IBHE as it has evolved. We began the CSEP/IBHE partnership with a comparative orientation to sharpening policy in successive iterations by generalizing findings and applying lessons learned. In this section, we review how our findings shaped policy. Table 1 offers an overview of the meta-evaluation, support, and research processes that engaged our team from 2004 into the present. All major project events, products, and policy changes are indicated.

Table 1

ITQ Iterations of Activities, Products, and Policy

Project year # STEM/ # all projects	Grantwide activities	Center products	Policy iterations
2004 22/26	Fall and spring symposia	None	ITQ (No Child Left Behind) initial request for proposals (RFP) developed from former Eisenhower grants Partnerships are defined by listing potential partners by institutional type First of annual board summaries prepared with "lessons learned"

(continued)

Table 1 *(continued)*

Project year # STEM/ # all projects	Grantwide activities	Center products	Policy iterations
2005 18/22	Site visits begin Fall symposium focus groups & questionnaire for project partners Results comprise *Proceedings* data set	*Proceedings from the third symposium: School-university partnerships for improving teacher quality* disseminated Structures of training and processes of implementation (STPI) model first draft developed	
2006 20/22	Fall symposium	STPI model revised	New application process
2007 6/6	Spring symposium and bidder's conference	Collaboration rubric created from NCATE professional development schools standards; rubric used by grant readers	IBHE commissions white paper on collaboration from an external consultant RFP includes overview of professional development school model and includes definition of collaboration Fewer grants funded with expectation that grants would be three-year and receive full funding Bidders attend meta-evaluation seminar
2008 8/10	Fall symposium Position papers issued prior to symposium Rotating focus group discussion on each research question used to refine the model	Four position papers on four research questions presented Draft configurations of partnership model	The IBHE strategic plan, *Illinois Public Agenda for College and Career Success*, approved by trustees of the IBHE Professional development school focus evolves to in-service orientation; collaboration rubric no longer used

(continued)

Table 1 *(continued)*

Project year # STEM/ # all projects	Grantwide activities	Center products	Policy iterations
2009 9/10	Fall symposium Center researchers share case studies and logic models, projects respond, and cases are revised	Case studies developed for review by grant stakeholders Stated theories of change and logic models required for applications and renewals	CSEP meta-evaluation presented to the IBHE trustees' monthly meeting in April Renewal and new applications are reviewed considering theories of change Needs assessments required for the first time
2010 6/10	Spring and fall symposia Fall symposium included evaluation technical support meetings	Revised ITQ RFP based on meta-evaluation	New grant award process developed and piloted
2011 6/9	Planned activities: summer evaluation webinar Fall/spring meta-evaluation for stakeholder communications and dissemination	*Planning and Changing* special issue on school-university professional development in the STEM disciplines Summer begins the final meta-evaluation (2011–2012)	Increased evaluation expectations to link teacher and student learning Meta-analysis to be presented to IBHE trustees

Theory-Based Evaluation and ITQ Theories of Change

We take theory-based evaluation as our overall approach, and all ITQ projects operate under three common theories of change. First, each ITQ request for proposals (RFP) represents federal and state policy makers' current theories about school-university professional development partnerships. For example, one implied theory is that STEM professional development requires P-20 partnerships focused on content expertise to improve student learning. This theory remains unchanged from 2004. Second, we believe that evaluation must be integral to project design and develop the capacity among the partners to improve using evaluation results. Over the years, IBHE has required detailed evaluation plans that bring project-level evaluators to the planning table. This too is a theory about the centrality of evaluation. Finally, each P-20 partnership designs and executes its own theory of change based on IBHE's policy focus and

pertinent scholarship. All projects offer activities and interventions they believe will yield results. These interventions are causal theories that are testable. Logic modeling is used to make theories of change easy to express and "evaluable." Here is a simplified version of ITQ's general theory of change (Wholey, et al., 2010, p. 3) represented as a sequence.

- P-20 Partnership
- Professional Development
- Teacher Learning
- Implementation
- Student Learning

Because partnership is critical to each theory of change, our case analyses consider partnership structures, processes, and evaluation capacity. The sequence above is the basic logic of all ITQ projects, even though "professional development" means different things in different projects. Each step is a precondition for those that follow: partnerships (and the IBHE's support) are precursors to professional development activities and so on. The dependent variable is student achievement, although evaluators continue to struggle with the methodological issues implied by this causal chain. There are two problems creating this situation. First, linking student learning to professional development is challenging and has been the holy grail of professional development evaluation (Guskey, 2000), although No Child Left Behind accountability mandates have deepened our knowledge about how to do this. But linking partnerships to student learning is more challenging yet, and our team and each project continues to struggle with a long and messy set of potential links asking to be tested. This is a common challenge for program theory when programs are complex, and theories are comprised of many potential pathways to results (Weiss, 1997). Second, many of these projects use constructivist approaches to teaching and learning that are not readily captured under current accountability regimes, so each project develops its own evaluation with no specifications from the IBHE beyond the program theory orientation. This enables us all to develop new ways to capture context-specific outcomes, but it makes comparisons less transparent than if evaluation parameters were specified. In part because of increased grant evaluation expectations, better assessments of teacher and student learning (and the connections between them) are developing, but this remains challenging and and a probable issue for further research.

Developmental Stages of ITQ Policy

The evaluation from 2004 to 2011 has developed recursively as we generated two successive structural models for looking at partnerships and applied these models to implementation processes and evaluation capacity building. In 2004, the first of three evaluation and policy development iter-

ations began. Our initial evaluation relied on the professional development scholarship available at that time. This was, and still is, a more well-developed set of theories than those about partnerships, to describe and explain what each case might accomplish. One important initial finding was that not all 22 of the grant-funded partnerships represented existing, ongoing, and authentic collaborations poised to use the grant funds effectively. The IBHE recognized that new partnerships needed start-up time for authentic collaboration, but the mere availability of funds was a poor beginning. Another common oversight was failure to design collaborative, job-embedded professional learning opportunities for teachers. The IBHE grant staff realized that professional development regimes not designed with collaboration and evaluation for improvement in mind should: (a) be redesigned and (b) be required to evaluate this project element. From that time to this, IBHE supports grants to explore ways to use evaluation to draw connections between teacher and student learning, with implementation as an intermediate step. From this beginning, we refocused on partnerships and articulated the four core research questions that guide us still. We discuss each year from 2004 on considering activities, Center products, and policy iterations. We refer the reader to Table 1 for an overview.

Starting in 2005, we developed structures of training and processes of implementation (STPI), a four-part model defining four professional development prototypes, from focus groups at the symposium and the first rounds of site visits (Baker, Gardner, & Curry, 2008; Gardner, Baker, & Curry, 2008; Gardner, Pacha, & Baker, 2007; Sappington, Baker, Gardner, & Pacha, 2010). Of the four types, only two were considered viable given what we knew about effective professional development sufficiently robust to alter student learning and achievement. The two viable models were: (a) ongoing collaborative learning opportunities embedded in school culture and work routines and (b) ongoing collaborative learning opportunities shared in loosely coupled networks with the university partner as the hub. This latter model had two specific applications: (a) middle and high school math and science teachers who benefitted from regional connections with discipline peers and (b) school and district level administrators convened by a regional university for school and district improvement. These networked collaborations were facilitated by face-to-face workshops, on-line professional networks, and shared resources. In 2008–2009, two of ten ITQ partnerships used this network model. One appears as a case study in this issue: "Improving Science Instruction in Southwestern Illinois and Metro East St. Louis: Students Learning Science through a Sustained Network of Teachers," a partnership project located at Southern Illinois University-Edwardsville (Voss, Khazaeli, Eder, & Gardner, 2011).

In 2006, the STPI model was revised as we continued our site visits and symposia. Site visits were critical to case development, and each site had a primary contact with CSEP and access to a senior researcher providing expert evaluation support. A new IBHE Executive Director brought

new visions for ITQ, which were realized in 2007. Executive leadership provides vision, and the new executive envisioned a P-20 system based on inter-institutional collaboration. This vision is also the origin of the *Illinois Public Agenda for College and Career Success*, the IBHE (2008) strategic plan. A significant policy shift in ITQ resulted: a new emphasis on professional development (PD) schools as the preferred partnership vehicle. The PD school is a well-known model (Holmes Group, 1990; Teitel, 1994). The Executive Director commissioned a white paper on collaboration and awarded grants favoring the PD school model. The emphasis shifted from STEM projects to a more diverse set of educational reforms. In response we developed a rubric based on the *NCATE Professional Development Schools Standard III: Collaboration* (National Council for the Accreditation of Teacher Education, 2001). This proved unsatisfactory as the standard and rubric did not reflect the realities of establishing, developing, and sustaining partnerships and only considered PD schools as partnership models. Only two of our projects since 2004 have used a PD school model. Models we found for studying and evaluating collaboration were more sanguine about what collaboration could accomplish than our data suggested (Gajda, 2004; Gajda & Koliba, 2007). The models were aspirational, reflecting the long-standing hopes for productive school and university collaboration, but they were not empirically grounded.

This first year under the new P-20 collaboration policy revealed three key findings: (a) there were few authentic PD school model partnerships in the state; (b) realizing the model in practice was complex and more challenging than policy makers realized; and (c) there were robust partnerships doing effective STEM professional development that did not match this model. The PD school model faded in subsequent years of refining ITQ policy. One lasting contribution of this policy cycle was a leaner set of grants, each funded fully for three years. This policy developed as a result of the 2004 evaluation demonstrating that new partnerships needed time to develop capacity.

Also in 2007, more requirements were made of project-level evaluations. Specifically, projects were required to prepare a coherent theory of change, using logic modeling as a tool. This was the foundation of project case studies in 2008–2009.

In 2008, the *Illinois Public Agenda for College and Career Success* was accepted by the trustees of the IBHE, and the CSEP team developed and shared four position papers at the annual symposium. Each paper addressed one of the four research questions. Project partners from around the state had advanced access to the papers, and focus groups included all symposium participants commenting on all four papers. The results were then shared with project directors and evaluators. This work forms the foundation of the findings in this special issue. Although we have continued to develop and refine our ideas about the structures, implementation processes, and evaluation capacity, we still apply the conceptual framework developed in 2008.

Major policy changes came about in 2009 with a completely revised RFP written jointly by CSEP and IBHE partners. This process began with the development of individual case studies used for comparison. The case studies also strengthened support to the projects as site visitors used them in discussions with project partnerships along the lines of the four research questions. Detailed needs assessments were required for the first time, although some projects did them voluntarily right along. By now, fewer projects expecting three years of funding were the norm, and all continuing projects were required to refine their approaches based on statewide evaluation and their own formative and summative evaluations. The three case studies in this special issue narrate their change processes and evolution of partnership structures, implementation processes, and evaluation capacity.

By 2010, projects that did not support effective models in their structures, processes, and evaluation approaches lost funding. A new grant award processes and scoring system was initiated that required a theory of change based on scholarship and partnership history. A mix of ongoing and new projects was funded. We redoubled our efforts with comparative cases, now paired to explore contextual variation. (Two case studies presented here reflect this model. The Southern Illinois University-Carbondale and University of Chicago partnerships, both elementary math projects, were paired for data collection and analysis in 2009). The new policy completely eliminated projects that used classroom-by-classroom change models in favor of those with ongoing collaborative structures and core processes (i.e., leadership, expertise, and support).

The new set of 2010–2011 projects envision STEM professional development partnerships in three ways using the three configurations of school-university partnerships model to guide their design and development. First, the projects share a school core enhancement approach that places expertise and support at the disposal of teachers engaged in their daily work, although there are variations (Baker et al., 2007; Vogel, 2010). Second, all projects are designed for distributed leadership (Camburn, Rowan, & Taylor, 2003; Spillane, Diamond, & Jita, 2003). Finally, projects are designed as networks and rely on resource network supports for teachers (Sarason & Lorentz, 1998).

We move forward in our efforts to understand partnerships that face common and specific challenges and build on successes. Now, there were fewer projects, nine in all, but all designs use school-based change, networked, or combination models, so we can test our theories about their uses and potential effectiveness. Now our comparative cases face more challenges and successes in common as our recursive learning process in evaluation and project synthesis continue.

Conclusion

From 2004 forward, statewide evaluations of school-university partnership structures, collaborative implementation processes, and evaluation capacity have been used by researchers and policy makers to make judgments about what works. The scholarship on partnerships is descriptive and colored by high hopes about what partnerships can accomplish. We have attempted in successive iterations to describe partnerships and develop explanations using a comparative case approach. Since 2005, we have developed a model that offers three structural views of partnerships and we use that lens to characterize collaborative processes that convene partners to improve student learning and achievement. We have also targeted evaluation capacity building in our work. Since 2008–2009, we have assumed a program theory approach for the full set of grants, individually and comparatively. The next articles in this special issue of *Planning and Changing* offer a portrait of our best thinking to date, followed by three cases studies as representative examples, each representing one of the three structural configurations and site-specific approaches to collaboration within that framework.

References

Abell, S. K., Lannin, J. K., Marra, R. M., Ehlert, M. W., Cole, J. S., Lee, M. H., Rogers, M. A. P., & Wang, C. Y. (2007). Multi-site evaluation of science and mathematics teacher professional development programs: The project profile approach. *Studies in Educational Evaluation, 33,* 135–158.

Badiali, B., & Flora, R. (2000). Beyond collaboration: Accounts of partnership from the Institute for Educational Renewal based at Miami University. *Peabody Journal of Education, 75*(3), 145–160.

Baker, P. J. (2011). Three configurations of school-university partnerships: An exploratory study. *Planning and Changing, 42*(1/2), 41–62.

Baker, P. J., Bakken, J., Blum, C., Cates, G., Swerdlik, M., Sylvester, B., & Thompson, J. (2007, March). *Developing learning-centered schools with a comprehensive system of student support.* Paper presented at the Fourth International Association for Positive Behavior Support Conference, Boston, MA.

Baker, P. J., & Gardner, D. C. (2005, August). *Structures of training and implementation processes (STPI) model.* Paper presented at the State Higher Education Executive Officers Professional Development Conference, Seattle, WA.

Baker, P. J., Gardner, D. C., & Curry, L. (2008, October). *Structural configurations of school-university partnerships: An exploratory paper.* Paper presented at the Fall Illinois Teacher Quality State Grant Symposium, Bloomington, IL.

Ball, D. L., & Cohen, D. K. (1996). Reform by the book: What is—or might be—the role of curriculum materials in teacher learning and instructional reform? *Educational Researcher, 25*(9), 6–8.

Birman, B. G., Reeve, A. L., & Sattler, C. L. (1998). *The Eisenhower professional development program: Emerging themes from six districts.* Washington, DC: Department of Education.

Blackwell, P. J. (2004). Putting the system together: Lessons learned by the Eisenhower initial teacher professional development programs. *Action in Teacher Education, 25*(4), 38–47.

Boyd, S. E., Banilower, E. R., Pasley, J. D., & Weiss, I. R. (2003). *Progress and pitfalls: A cross site look at local systemic change through teacher enhancement.* Chapel Hill, NC: Horizon Research. Retrieved April 22, 2011, from http://www.horizon-research.com/LSC/news/progress_and_pitfalls.pdf

Brabeck, M. M., Walsh, M. E., & Latta, R. (2003). Meeting at the hyphen: Schools-universities-communities-professions in collaboration for student achievement and well-being. In M. M. Brabeck, M. E. Walsh, & R. Latta (Eds.), *Yearbook of the National Society for the Study of Education* (Vol. 102, p. 2). Chicago: University of Chicago Press.

Bryk, A. S., & Schneider, B. (2002). *Trust in schools: A core resource for improvement.* New York: Russell Sage Foundation.

Camburn, E., Rowan, B., & Taylor, J. (2003). Distributed leadership in schools: The case of elementary schools adopting comprehensive school reform models. *Educational Evaluation and Policy Analysis, 25*(4), 347–373.

Chen, H. T. (2005). *Practical program evaluation: Assessing and improving planning, implementation, and effectiveness.* Thousand oaks, CA: Sage.

Chen, H. T., & Rossi, P. H. (1987). The theory-driven approach to validity. *Evaluation and Program Planning, 10,* 95–103.

Clifford, M., & Millar, S. B. (2008). *K–20 partnerships: Literature review and recommendations for research.* (WCER Working Paper No. 2008-3). Madison, WI: Wisconsin Center for Education Research.

Desimone, L. (2009). Improving impact studies of teachers' professional development: Towards better conceptualizations and measures. *Educational Researcher, 38*(3), 181–199.

Druckman, R., & Peterson, L. M. (2002). Partnerships with K–12 education. *New Directions for Higher Education, 120,* 11–18.

Frechtling, J. A. (2007). *Logic modeling methods in program evaluation.* San Francisco: John Wiley & Sons.

Gajda, R. (2004). Utilizing collaboration theory to evaluate strategic alliances. *American Journal of Evaluation, 25*(1), 65–77.

Gajda, R., & Koliba, C. (2007). Evaluating the imperative of intraorganizational collaboration: A school improvement perspective. *American Journal of Evaluation, 28*(1), 26–44.

Gardner, D. C. (2010, Spring). Illinois teacher quality professional development partnerships. *The Statewide Standard, 12*, 12.

Gardner, D. C. (2011). Characteristic collaborative processes in school-university partnerships. *Planning and Changing, 42*(1/2), 63–86.

Gardner, D. C., Baker, P. J., & Curry, L. (2008, October). *How Illinois Teacher Quality projects are implemented: An exploratory paper.* Paper presented at the Fall Illinois Teacher Quality State Grant Symposium, Bloomington, IL.

Gardner, D. C., Pacha, J. M., & Baker, P. J. (2007). Preparing future leaders with an elaborated professional development model. In L. Lemasters (Ed.), *At the tipping point: Navigating the course for the preparation of educational administrators.* Miami, AZ: NCPEA Press.

Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Education Research Journal, 38*(4), 915–945.

Guskey, T. R. (2000). *Evaluating professional development.* Thousand Oaks, CA: Corwin.

Haeffele, L. M., Hood, L., & Feldmann, B. (2011). Evaluation capacity building in a school-university partnership grant program. *Planning and Changing, 42*(1/2), 87-100.

Hawley, W. D., & Valli, L. (1999). The essentials of effective professional development: A new consensus. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 127–150). San Francisco: Joseey-Bass.

Holmes Group. (1990). *Tomorrow's schools: Principles for the design of professional development schools.* East Lansing, MI: Author.

Illinois Board of Higher Education (IBHE). (2010, November). *FY2010 ESEA improving teacher quality state grant program request for proposals.* Springfield, IL: Author. Retrieved April 1, 2011, from: http://www.ibhe.state.il.us/grants/RFP/FY2010/NCLB/RFP.doc

Illinois Board of Higher Education (IBHE). (2008, December). *The Illinois public agenda for college and career success.* Retrieved April 1, 2011, from http://www.ibhe.state.il.us/masterPlanning/default.htm

Illinois Board of Higher Education (IBHE). (2003). *FY2003 ESEA improving teacher quality state grant program request for proposals.* Springfield, IL: Author.

Joint Committee on Standards for Educational Evaluation (1994). *The program evaluation standards: How to assess evaluation of educational programs* (2nd ed.). Thousand Oaks, CA: Sage.

Kingsley, G., & Waschak, M. (2005, September). *Finding value and meaning in the concept of partnership.* Paper presented at the MSP evaluation summit: Evidence-based findings from MSP, Minneapolis, MN. Retrieved April 1, 2011, from http://sp.mspnet.org/media/data/Kingsley-Waschak_fnleval.pdf?media_000000006137.pdf

Krasny, M. E. (2005). University K–12 science outreach program: How can we reach a broad audience? *BioScience, 55*(3/4), 350–359.

Leslie, D. A. (2011). Seeking symmetry in a school-university partnership: University of Chicago and Chicago Public Schools—A collaborative approach to developing models and tools for professional development and teacher preparation. *Planning and Changing, 42*(1/2), 120–154.

McLaughlin, M. W., & Talbert, J. E. (2006). *Building school-based teacher learning communities: Professional strategies for improved student achievement.* New York: Teachers College Press.

National Council for Accreditation of Teacher Education (2001). *Standards for professional development schools.* Retrieved December 1, 2006, from http://www.ncate.org/LinkClick.aspx?fileticket=FcHbf2B%2B670%3D&tabid=125

National Network of Eisenhower Regional Consortia and Clearinghouse (2004a). *What experience taught us about collaboration. Facilitating math and science reform: Lessons learned series.* Washington, DC: Author. Retrieved April 1, 2011, from http://www.sedl.org/pubs/catalog/items/ms91.html

National Network of Eisenhower Regional Consortia and Clearinghouse (2004b). *What experience taught us about professional development. Facilitating math and science reform: Lessons learned series.* Washington, DC: Author. Retrieved April 1, 2011, from http://www.sedl.org/pubs/ms90/experience_pd.pdf

Newmann, F. M, Smith, B. A., Allensworth, E., & Bryk, A. S. (2001, December), Instructional program coherence: What it is and why it should guide school improvement policy. *Educational Evaluation and Policy Analysis, 23*(4), 297–321.

Office of Budget & Management. (1993). *Government Performance Results Act.* Retrieved April 1, 2011, from: http://www.whitehouse.gov/omb/mgmt-gpra/gplaw2m

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage.

Podolny, J. M., & Page, K. L. (1998). Network forms of organization. *Annual Review of Sociology, 24,* 57–76.

Porter, A., Garet, M., Desimone, L., Yoon, K. S., & Birman, B. (2000). *Does professional development change teaching practice? Results of a three-year study.* Washington, DC: U.S. Department of Education.

Preskill, H., & Boyle, S. (2008). A multidisciplinary model of evaluation capacity building. *American Journal of Evaluation, 29*(4), 443–459.

Prusaczyk, J., & Baker, P. J. (2011). Improving Teacher Quality in Southern Illinois: Rural Access to Mathematics Professional Development (RAMPD). *Planning and Changing, 42*(1/2), 101–119.

Ragin, C. C. (2008). *Redesigning social inquiry: Fuzzy sets and beyond.* Chicago: University of Chicago Press.

Sappington, N. E., Baker, P. J., Gardner, D. C., & Pacha, J. (2010, Winter). A signature pedagogy for leadership education: Preparing principals through participatory action research. *Planning and Changing, 41*(3/4), 249–273.

Sarason, S. B., & Lorentz, E. M. (1998). *Crossing boundaries: Collaboration, coordination, and the redefining of resources.* San Francisco: Jossey-Bass.

Spillane, J. P., Diamond, J. B., & Jita, L. (2003). Leading instruction: The distribution of leadership for instruction. *Journal of Curriculum Studies, 35*(5), 533–543.

Stake, R. E. (2006). *Multiple case study analysis.* New York: Guilford Press.

Stockdill, S. H., Baizerman, M., & Compton, D. W. (2001. Spring). Towards a definition of the ECB process: A conversation with the ECB literature. *New Directions for Evaluation, 93,* 7-25.

Stoll, L., & Louis, K. S. (2007). *Professional learning communities: Divergence, depth, and dilemmas.* Maidenhead, NY: McGraw-Hill/Open University Press.

Teitel, L. (1994). Can school-university partnerships lead to the simultaneous renewal of schools and teacher education? *Journal of Teacher Education, 45*(4), 245–252.

Vogel, L. R. (2010). *Leading standards-based education reform: Improving implementation of standards to increase student achievement.* Lanham, MD: Rowman & Littlefield.

Vogt, W. P., Gardner, D. C., & Haeffele, L. M. (in press). *When to use which research designs.* New York: Guilford Press.

Vogt, W. P., Gardner, D. C., Haeffele, L. M., & Baker, P. J. (2010). Innovations in program evaluation: Comparative case studies as an alternative to RCTs. In W. P. Vogt & M. Williams (Eds.), *The Sage handbook of innovations in social science research methods* (pp. 537–600). London: Sage.

Voss, E. J., Khazaeli, S., Eder, D., & Gardner, D. C. (2011). Improving science instruction in Southwestern Illinois and Metro-East St. Louis: Students learning science through a sustained network of teachers. *Planning and Changing, 42*(1/2), 155–175.

Weiss, C. (1997). Theory-based program evaluation: Past, present, and future. *New Directions for Evaluation, 76,* 41–55.

Weiss, C. H. (2000). Which links in which theories shall we evaluate? *New Directions for Evaluation, 87,* 35–45.

Wholey, J. S., Hatry, H. P., & Newcomer, K. E. (Eds.). (2010). *Handbook of practical program evaluation* (3rd ed.). San Francisco: Jossey-Bass/Wiley.

Zhang, X., McInerney, J., Frechtling, J., Michie, J., Wells, J., Miyaoka, A. & Nyre, G. (2009). *Who benefits? The effect of STEM faculty engagement on MSP: A final report.* (Prepared for the National Science Foundation. Rockville, MD: Westat.) Retrieved April 1, 2011, from http://hub.mspnet.org/media/data/MSP_Report_Westat_06-05-09.pdf?media_000000005649.pdf

Dianne C. Gardner is an Associate Professor in the Department of Educational Administration and Foundations at Illinois State University, Normal, Illinois.

Appendix A

Structures: Collaborative Elements

Establish initial understandings ⟷ Fill out and elaborate understandings

	Background		Fieldwork		
STRUCTURES **Collaborative Elements**	Proposal	Interviews	Observation(s)	Documents/ Artifacts	Interviews
Structure–General • ***Entities:*** who are the collaborating institution(s), district(s), and school(s)? What are the internal and external connections among them? What connecting structures exist? • ***People:*** Who are the people involved from each entity? Who is connected to whom? • ***Hierarchy:*** What are the levels of decision-making & authority? • ***Sociogram:*** Map the structures and interactions among entities and people.	Use the proposal to create the initial identification of entities, people, and relationships. Create initial sociogram.	Clarify and verify the sociogram information. Indicate any new information not included in the proposal.	Document observations of project structures (sociogram elements).	• Project organizational charts • Participant lists • Project brochures, handouts and web pages	Document collaborators' views of project structures.

	Establish initial understandings ⟷ Background		Fill out and elaborate understandings ⟷ Fieldwork		
STRUCTURES **Collaborative Elements**	Proposal	Interviews	Observation(s)	Documents/ Artifacts	Interviews
Structure–Roles & Relationships • Who play key roles within the collaborative? (e.g., trainers, participants, designers, consultants, decision-makers) • Who are "boundary-spanners"? • Who is getting paid to do what? • Who is not paid, but critical to the project work?	Use the proposal to create initial list of key players, boundary spanners, paid and unpaid players.	Clarify lists of players and roles.	Observe various players and document their respective roles.	• Project budget (who gets paid for what?) • Job descriptions • Project brochures, handouts and web pages	Document key players' views of roles and relationships.

	Establish initial understandings ⟷		Fill out and elaborate understandings ⟷		
	Background		**Fieldwork**		
STRUCTURES **Collaborative Elements**	Proposal	Interviews	Observation(s)	Documents/ Artifacts	Interviews
Structure–Rules & Expectations • What are the formal rules governing the collaborative and its activities? • How did the formal rules evolve? Were they developed among the partners or unilaterally? • What are the informal rules and behavioral norms? How are these developed and adopted?	Use the proposal to create an initial list of formal project rules.	Clarify formal rules and inquire about informal rules and behavioral norms.	Observe partner activities and document the presence, use and effects of formal and informal rules.	• Policy manual • Meeting handouts • Financial agreements • MOUs • Subcontracts • Individual contracts • Space arrangements/ agreements • Accountability requirements • Reports/audits	Document key players' views of the formal and informal rules and norms from the perspectives of school and university administrators; teachers and faculty; content specialist and other personnel.

	Establish initial understandings ⟷		Fill out and elaborate understandings ⟷		
	Background		**Fieldwork**		
STRUCTURES **Collaborative Elements**	Proposal	Interviews	Observation(s)	Documents/ Artifacts	Interviews
Structure–Resources • ***Financial:*** How does the money flow (e.g., top down, shared among partners)? How financially dependent is this collaborative upon the Title II funds? Are other financial resources being put to use? • ***In-kind:*** What other types of resources are being donated to the collaborative by the partners? How are they being used? • ***Knowledge:*** Which type of model is operating: dependent (one-way knowledge flow), independent (self-directed), or interdependent (reciprocal-one cannot occur without the other)?	Use the proposal to create initial lists of financial, in-kind and knowledge resources and how they are being applied.	Clarify and verify initial resource lists.	Observe the actual use of financial, in-kind and knowledge resources during project activities. Document how the knowledge model is operating.	• Project budget • Subcontracts • Activity descriptions • Project brochures and handouts • Time and effort charts	Document key players' views of the project's resource networks. Document key players' views of the knowledge model, its features and its effects.

Appendix B

Professional Learning Processes: Collaborative Elements

	Establish initial understandings ⟷		Fill out and elaborate understandings ⟷		
	Background		Fieldwork		
PROFESSIONAL LEARNING PROCESSES Collaborative Elements	Proposal	Interviews	Observation(s)	Documents/ Artifacts	Interviews
Processes – Prehistory • What kinds of relationships existed among the collaborators prior to this project? • ***Sociogram:*** What did the pre-project sociogram look like? What differs from the current sociogram? • What happened to create the current sociogram?	Use the proposal to glean any available information about the prehistory of the project.	Gather additional information about prehistory from the project director.	Document any observable remnants (operating or vestigial) from the project's prehistory.	• Historical descriptions • Prior grant proposals (some may be in Eisenhower archives) • Historical partnership agreements	Document key players' knowledge and views about the project's prehistory.

	Establish initial understandings ⟷		Fill out and elaborate understandings ⟷		
	Background		Fieldwork		
PROFESSIONAL LEARNING PROCESSES **Collaborative Elements**	Proposal	Interviews	Observation(s)	Documents/ Artifacts	Interviews
Processes – Current • ***Planning:*** What current processes operate in the project related to planning? • ***Decision-Making:*** How are decisions made within the project? • ***Implementation:*** How are project processes (e.g., activities, interactions, communication, data collection, modifications) occurring? • ***Institutionalization:*** What processes are occurring that lead to (or have the potential to lead to) sustained action?	Use the proposal to determine the intended planning, decision-making, implementation and institutionalization processes.	Gather additional information about intended and actual planning, decision-making, implementation and institutionalization processes.	Document observable planning, decision-making, implementation and institutionalization processes	• Meeting agendas • Decision documents • Activity records • Communication records • Collected data • Project revisions	Document key players' views of how current processes are occurring.
Processes – Future • What plans does the project have for continuing and improving current processes?	Use the proposal to determine projected future project processes.	Gather information regarding future project processes.	Document observable examples of future process continuation and improvement.	• Planning documents • Vision statements • Additional grant proposals • In-kind and other contributions	Document key players' views of future project processes.

Appendix C

Evaluation Capacity Building: Collaborative Elements

	Establish initial understandings		Fill out and elaborate understandings		
	Background		Fieldwork		
EVALUATION & EVALUATION CAPACITY BUILDING Collaborative Elements	Proposal	Interviews	Observation(s)	Documents/ Artifacts	Interviews
Evaluation: Goals, Outcomes and Measures • ***Goals:*** What are the project goals? • ***Outcomes:*** What are the intended outcomes for each goal? • ***Measures:*** How are project goals and outcomes being measured? Are the measures adequate to determine project effects? • ***Evaluation:*** To what extent does the evaluation plan include both formative evaluation related to processes, and summative evaluation related to outcomes? Is the plan adequate to provide feedback to the project participants and accountability information for IBHE?	Use the proposal to determine intended goals, outcomes and measures.	Gather additional information and clarification regarding goals, outcomes and measures.	Document observable occasions where goals, outcomes and measures are discussed and utilized.	• Databases • Reports • Project records	Document key players' views of goals, outcomes and measures.

	Establish initial understandings ⟷		Fill out and elaborate understandings ⟷		
	Background		Fieldwork		
EVALUATION & EVALUATION CAPACITY BUILDING Collaborative Elements	Proposal	Interviews	Observation(s)	Documents/ Artifacts	Interviews
Evaluation: Goals, Outcomes and Measures • ***Theory of Change:*** How does the project represent a theory of change? Is the project a reasonable plan that will impact student learning? • ***Feedback Mechanisms:*** What processes enable partners to learn together to improve the partnership and the project? • ***Development of Statewide Capacity:*** How do the evaluations support the development of statewide capacity that improves professional development partnerships?	Use proposals and interim evaluations to characterize the theory of change, identify the feedback processes that will allow partnerships to (1) become sustainable; (2) produce potentially scalable models; and (3) have an impact on student learning.		Document observable development of programs into increasingly coherent theories of change with student learning at the center, using evaluation at the project and state levels to do so	• Meeting agendas • Decision documents • Activity records • Communication records • Collected data • Project revisions • Logic Model • Symposia-based focus groups • Project Notebooks • Project Assessments including student work and other artifacts of student learning	Document key players' views on evaluation uses and their applications to project improvement and building capacity to support sustainability of the partnership.